

*Sub A7*

WHAT IS CLAIMED IS:

1. A spectrophotometer, comprising:
  - a light source used for emitting a light beam having a predetermined wavelength range;
  - light guiding means for guiding the light beam from said light source to a target sample;
  - a spectrometer head consisting of light diffracting means for diffracting the light beam transmitted through the target sample to produce optical spectra, light reflecting means for reflecting the diffracted light from the light diffracting means, light intensity measuring means for measuring intensity of incident light reflected by the light reflecting means, drive means for reciprocating the intensity measuring means within a predetermined range, and stop means for limiting a range of movement of the intensity measuring means; and
  - a signal-processing unit used for reproducing a distribution of light intensities measured by the light intensity measuring means of the spectrometer head.

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2. The spectrophotometer according to claim 1, wherein said light guiding means comprises a multimode optical fiber.

25 3. The spectrophotometer according to claim 1, wherein said light diffracting means comprises a reflective diffraction

~~Amendments~~

4. The spectrophotometer according to claim 1, wherein  
said light reflecting means comprises a concave mirror.

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5. The spectrophotometer according to claim 1, wherein  
said intensity measuring means comprises a photodiode array,  
with a plurality of photodiodes linearly arranged on a  
longitudinal mount at regular physical intervals.

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6. The spectrophotometer according to claim 1, wherein  
said drive means comprises a piezoelectric drive unit  
physically expandable or contractible in accordance with the  
level of an applied voltage.

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7. The spectrophotometer according to claim 1, wherein  
said drive means comprises:

a bimorph piezoelectric drive plate physically expandable  
or contractible in accordance with the level of an applied  
20 voltage; and

a bimorph piezoelectric fixing plate cemented together  
with said bimorph piezoelectric drive plate, said bimorph  
piezoelectric fixing plate being physically expandable or  
contractible in accordance with the level of the applied  
25 voltage.

5. The spectrophotometer according to claim 1, wherein  
said stop means comprises two stoppers arranged at  
predetermined positions around opposite ends of the intensity  
measuring means of the spectrometer head in a moving direction  
5 at said intensity measuring means so as to limit the  
reciprocating movement of the intensity measuring means.

6. The spectrophotometer according to claim 6, wherein a  
displacement amplifier is attached to said piezoelectric drive  
10 unit for amplifying a displacement of the piezoelectric drive  
unit.

7. The spectrophotometer according to claim 7, wherein  
said bimorph piezoelectric drive plate and said bimorph  
15 piezoelectric fixing plate cemented together are different from  
each other in their coefficients of expansion and coefficients  
of contraction in response to an applied voltage.

20 *14* A spectrophotometry using a spectrophotometer with  
drive means, comprising:

25 a light transmitting step of guiding a light beam from a  
light source to a target sample through a multimode optical  
fiber so as to allow the light beam to be partially transmitted  
without said sample;

30 a light reflection step of receiving the light beam,

transmitted through the sample, into a reflective diffracting grating, thus diffracting the light beam into discrete wavelengths to produce optical spectra;

5 a light reflection step of reflecting the optical spectra to the diffracted light beam by a concave mirror to a photodiode array;

a first intensity measurement step of measuring light intensities of the incident optical spectra by the photodiode array;

10 a second intensity measurement step of moving the photodiode array using the drive means by a distance equal to the physical interval between photodiodes of said photodiode array and measuring light intensities of the incident optical spectra at desired positions corresponding to said intervals;

15 and

an intensity distribution reproduction step of transmitting spectrometric analysis data, obtained at the first and second intensity measurement steps, from the photodiode array to a signal-processing unit, and reproducing a light 20 intensity distribution of the target sample by the signal-processing unit.